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*cont*  
thickness exhibiting flexibility substantially conforming to the flexibility of the surface of said portion.

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**REMARKS**

The Office Action dated March 12, 2002 has been received and carefully noted. The above amendments and the following remarks are submitted as a full and complete response thereto. By this Amendment, claims 6, 13, 16, 17 and 20 have been cancelled and claims 18, 19 and 21-23 have merely been amended to more clearly recite the claimed subject matter. No new matter is added. Accordingly, claims 18, 19 and 21-23 are pending in this application and are submitted for consideration. Claims 1, 2, 4, 5, 7-12, 14 and 15 have been withdrawn from further consideration.

However, it is again noted that claims 1, 2, and 4 should also be considered since they are generic claims, as stated by the Examiner in the Office Action dated March 12, 2001. Accordingly, Applicants respectfully request reconsideration and withdrawal of the final rejection because to date, Applicants have not received an Office Action addressing the subject matter of generic claims 1, 2 and 4.

Claims 6, 13 and 16-23 were rejected under 35 U.S.C. 102(e) as being anticipated by Mahoney (U.S. Patent No. 5, 521,351). The Office Action took the position that Mahoney discloses all the elements recited in the rejected claims. By this amendment, claims 6, 13, 16, 17 and 20 have been cancelled. Therefore, the rejection with respect to these claims is moot. However, Applicant respectfully submit that claims 1, 2, 4, 18, 19 and 21-23 recite subject matter that is neither disclosed nor suggested by Mahoney.

Claim 1 is directed to an object having a portion to be in contact with another object. The portion is made of at least one kind of material that is selected from a group including polymer material such as resin or rubber as well as glass. The portion has a surface entirely or partially coated with a carbon film having a wear resistance as well as at least one of a lubricity, a water repellency, and a gas barrier property.

Claim 18 is directed to a machine part selected from a group including an automobile part, a bicycle part, and an image forming apparatus part having a portion to be in contact with another object. The portion is made of an organic polymer material selected from a group including resin and rubber. The portion has a flexible surface entirely or partly coated with a DLC (diamond like carbon) film having a wear resistance and a lubricity as well as a thickness exhibiting flexibility substantially conforming to the flexibility of the surface of the portion.

Claim 19 is directed to a machine part selected from a group including hose, a sealing member, a pipe and or a sheet each employed in a machine, having a portion to be in contact with another object. The portion is made of an organic polymer material selected from a group including resin and rubber. The portion has a flexible surface entirely or partly coated with a DLC (diamond like carbon) film having a wear resistance and a lubricity as well as a gas barrier property and having a thickness exhibiting flexibility substantially conforming to the flexibility of the surface of the portion.

Claim 21 is directed to a diaphragm of a diaphragm pump employed in a machine having a portion to be in contact with a liquid. The portion is made of an organic polymer material selected from a group including resin and rubber. The portion has a flexible

surface entirely or partly coated with a DLC (diamond like carbon) film having a wear resistance and a water repellency as well as a thickness exhibiting flexibility substantially conforming to the flexibility of the surface of the portion.

Claim 22 is directed to a wiper blade employed in a machine and having a portion to be in contact with a water and a window pane of the machine. The portion is made of an organic polymer material selected from a group including resin and rubber. The portion has a flexible surface entirely or partly coated with a DLC (diamond like carbon) film having a wear resistance and a lubricity as well as a water repellency, and having a thickness exhibiting flexibility substantially conforming to the flexibility of the surface of the portion.

Claim 23 is directed to a machine part selected from a group including an automobile tire and a bicycle tire, having a portion to be in contact with another object, the portion being made of an organic polymer material selected from a group including resin and rubber, and the portion has a flexible surface entirely or partly coated with a DLC (diamond like carbon) film having a wear resistance, a lubricity and a water repellency as well as a gas barrier property and having a thickness exhibiting flexibility substantially conforming to the flexibility of the surface of the portion.

The Examiner took the position that the prior art discloses all the elements of the claimed invention. However, it is respectfully submitted that the prior art fails to disclose or suggest the structure of the claimed invention, and therefore, fails to provide the advantages of the present invention. For example, the present invention is configured have a portion made of an organic polymer material selected from a group including resin and rubber having a flexible surface. A DLC (diamond like carbon) film is entirely or partly

coating the flexible surface of the portion and has a thickness exhibiting flexibility substantially conforming to the flexibility of the surface of the portion, as recited in claims 1, 18, 19 and 21-23.

As a result of this claimed configuration, a good sliding property can be achieved with respect to the contact object because the carbon film has a high resistance against wear.

Mahoney discloses an apparatus and method for coating the inside of a hollow form with a thin film. Mahoney discloses, in one embodiment, an apparatus that includes a vacuum chamber enclosure having a cylindrical side wall, a top closure plate and a bottom closure plate. Thus, a hollow form is created that maybe comprised of various thermal set plastics or glass. As a result, the container disclosed by Mahoney can be treated with a carbon film at its inner surface. In addition, Mahoney discloses depositing a barrier coating film by using plasma deposition on the interior surface of the container.

However, Mahoney does not disclose or suggest a machine part, a diaphragm of a diaphragm pump or a wiper blade configured to have a portion made of an organic polymer material selected from a group including resin and rubber having a flexible surface. A DLC (diamond like carbon) film is entirely or partly coating the flexible surface of the portion and has a thickness exhibiting flexibility substantially conforming to the flexibility of the surface of the portion, as recited in claims 1, 18, 19 and 21-23.

Furthermore, it is asserted that Table 1 of Mahoney discloses moldings and other polymer forms and also discloses carbon film forming on the outer surfaces. However, the carbon film forming disclosed in Table 1 is only carbon film forming on glass containers

and glass lenses. Therefore, carbon film forming on a part or the like of organic polymer material such as a resin or rubber and having a flexible surface, as claimed by the present invention is not disclosed.

As claims 2 and 4 depend from claim 1, Applicants respectfully submit that each of these claims incorporate the patentable aspects thereof, and are therefore allowable for at least the same reasons discussed above.

Therefore, as discussed above, because Mahoney does not anticipate the present invention, Applicants respectfully request withdrawal of the rejection.

The Office Action rejected claims 6, 13 and 16-23 under 35 U.S.C. 102(b) as being anticipated by Itoh (U.S. patent 4,996,079) or Thaler (U.S. patent 4,981,717). Specifically, the Office Action took the position that Itoh or Thaler disclose all the elements of the present invention. By this amendment, claims 6, 13, 16, 17 and 20 have been cancelled. Therefore, the rejection with respect to these claims is moot. However, Applicant respectfully submit that claims 1, 2, 4, 18, 19 and 21-23 recite subject matter that is neither disclosed nor suggested by the prior art.

Itoh discloses a method of depositing thin films consisting mainly of carbon. More specifically, Itoh teaches depositing a carbon material upon a surface such a semiconductor, glass, metal, ceramic and other such materials. However, Itoh does not disclose or suggest a machine part, a diaphragm of a diaphragm pump or a wiper blade configured to have a portion made of an organic polymer material selected from a group including resin and rubber having a flexible surface. A DLC (diamond like carbon) film is entirely or partly coating the flexible surface of the portion and has a thickness exhibiting

flexibility substantially conforming to the flexibility of the surface of the portion, as recited in claims 1, 18, 19 and 21-23.

Thaler discloses a diamond like coating and method of forming the same. Specifically, Thaler discloses a diamond-like coating that is provided as a protective coating for sliding wear parts such as valves, pistons, and bearings. Thaler also discloses the film having a high degree of lubricity as well as hardness and durability. However, Thaler does not disclose or suggest a machine part, a diaphragm of a diaphragm pump or a wiper blade configured to have a portion made of an organic polymer material selected from a group including resin and rubber having a flexible surface. A DLC (diamond like carbon) film is entirely or partly coating the flexible surface of the portion and has a thickness exhibiting flexibility substantially conforming to the flexibility of the surface of the portion, as recited in claims 1, 18, 19 and 21-23.

Therefore, as discussed above, because Itoh and Thaler fail to disclose or suggest the claimed invention, Applicants respectfully request that the rejection be withdrawn.

Still further, because claims 2 and 4 are directly or indirectly dependent on claim 1, Applicants submit that each of these claims recite subject matter that is neither disclosed nor suggested by the cited prior art, for at least the reasons set forth above with respect to claim 1.

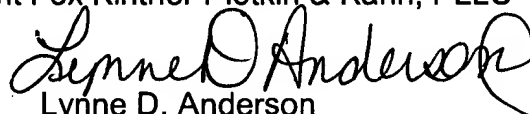
In view of the remarks, Applicants respectfully request allowance of claims 18, 19 and claims 21-23 together with generic claims 1, 2, and 4.

In view of the distinctions discussed above, withdrawal of the rejections is respectfully requested. Therefore, Applicants submit that the application is now in condition for allowance.

Should the Examiner believe the application is not in condition for allowance, the Examiner is invited to contact Applicant's undersigned attorney at the telephone number listed below.

In the event this paper is not considered to be timely filed, Applicants respectfully petition for an appropriate extension of time. The Commissioner is authorized to charge payment for any additional fees, which may be required with respect to this paper to Counsel's Deposit Account 01-2300, **referencing docket number 107351-00001**.

Respectfully submitted,  
Arent Fox Kintner Plotkin & Kahn, PLLC

A handwritten signature in black ink, appearing to read "Lynne D. Anderson", with a stylized flourish at the end.

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**MARKED-UP VERSION OF CLAIMS**

18. (Amended) A machine part selected from a group including an automobile part [such as a vibration damper or a sealing member such as an O-ring], a bicycle part [such as a wire cover of a speed changer], and image forming apparatus part [such as a roller or a belt and other machine part such as a seal member,] having a portion to be in contact with another object, said [portion] portion being made of an organic polymer material selected from a group including resin and rubber, and said portion having a flexible surface entirely or partly coated with a DLC (diamond like carbon) film having a wear resistance and a lubricity as well as a thickness exhibiting flexibility substantially conforming to the flexibility of the surface of said portion.

19. (Amended) A machine part selected from a group including [an automobile part such as a] hose, a sealing member [such as an O-ring and other machine part such as a hose, seal member], a pipe and or a sheet each employed in a machine, having a portion to be in contact with another object, said [portion] portion being made of an organic polymer material selected from a group including resin and rubber, and said portion having a flexible surface entirely or partly coated with a DLC (diamond like carbon) film having a wear resistance and a lubricity as well as a gas barrier property and having a thickness exhibiting flexibility substantially conforming to the flexibility of the surface of said portion.

21. (Amended) A [machine part selected from a group including an automobile part such as a diaphragm of a diaphragm pump and other machine part such as a diaphragm of a diaphragm pump employed in an artificial heart device or a fluid circuit,] diaphragm of a diaphragm pump employed in a machine having a portion to be in contact



with a liquid, said portion being made of an organic polymer material selected from a group including resin and rubber, and said portion having a flexible surface entirely or partly coated with a DLC (diamond like carbon) film having a wear resistance and a water repellency as well as a thickness exhibiting flexibility substantially conforming to the flexibility of the surface of said portion.

22. (Amended) A wiper blade employed in a machine [such as an automobile] and having a portion to be in contact with a water and a window pane of the machine, said portion being made of an organic polymer material selected from a group including resin and rubber, and said portion having a flexible surface entirely or partly coated with a DLC (diamond like carbon) film having a wear resistance and a lubricity as well as a water repellency, and having a thickness exhibiting flexibility substantially conforming to the flexibility of the surface of said portion.